



Communicable Disease and Epidemiology News

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- **Pet Associated Salmonellosis: Snakes and Chicks and Hamsters, Oh My!**
- **Zebra of the Month: Fever and Arthralgias After Travel to Sri Lanka**

Pet Associated Salmonellosis Infection: Snakes and Chicks and Hamsters, Oh My!

Based upon the 30,000 cases of culture-confirmed salmonellosis that are reported each year, the Centers for Disease Control and Prevention (CDC) estimates that 1.4 million cases of salmonellosis occur annually in the United States. Though the vast majority of *Salmonella* infections in the United States is food borne, a significant portion of infections are associated with contact with animals, including pets. **Clinicians should routinely counsel immunocompromised patients and parents of young children about potential risks associated with pets and animal exposures, including salmonellosis.**

Public Health-Seattle & King County receives more than 200 reports of culture confirmed salmonellosis each year. From 2000 to 2005, we received reports of 1,372 cases of culture confirmed salmonellosis, of which, 103 (7.5%) were associated with animal contact. Seventy-eight of these cases were associated with reptiles, 9 with live farm animals (other than poultry), 7 with live poultry, 4 with cats, 4 with dogs, and 1 with a pet hedgehog. Thirty-three of these cases occurred in children aged 5 or younger.

Snakes (and Other Reptiles)

The CDC estimates that 50 to 90 percent of reptiles are infected with salmonella (though reptiles do not become ill), and recommends that reptiles not be kept as pets in households where children under the age of 5 reside. A recent case of snake associated salmonellosis illustrates the danger:

In mid-February, a King County hospital reported that a hospitalized toddler had been diagnosed with *Salmonella* group B infection. During the epidemiological investigation Public Health learned that three other children in the household also had symptoms of salmonellosis. The toddler also suffered from an underlying chronic medical condition, (another risk factor for severe salmonellosis) and as a result of the salmonella infection, developed severe hemorrhagic diarrhea, requiring administration of red blood cells, platelets and fresh frozen plasma, resulting in a 9-day hospitalization.

Stools from the three children, plus a corn snake kept as a pet by a teenaged sibling (who also became sick but was not tested) tested at the Public Health Laboratory were positive for salmonella group B. The serotype was identified as *S. Typhimurium*; the pulsed field gel electrophoresis (PFGE) patterns for these isolates were indistinguishable.

The mother reported that the ill children never had direct contact with the corn snake, and the snake was not allowed to roam free in the house. However, the week prior to the first child's onset, the mother and teenager had cleaned the tank of the corn snake with a household broom that was subsequently used in the kitchen and other areas of the house without being cleaned and disinfected.

Although the mother was aware that reptiles pose a risk for salmonella infection, she was not aware that just having a reptile in the home was a risk. Though some pet stores in King County voluntarily give out information on the risk of salmonellosis when they sell a reptile, (which is recommended), this corn snake was purchased through the internet.

Chicks (and Ducklings)

Another type of pet that has been associated with salmonella infections (especially relevant as we move into spring and Easter season) are baby chicks and ducklings. Over the past decade, five salmonellosis outbreaks have been associated with handling chicks or ducklings in the United States. One of the largest outbreaks affected over 22 residents of Washington and Oregon, and half of the patients were younger than 13 years old.

The Washington State Department of Health has developed educational materials with the prevention message, "After You Touch a Duck or Chick, Wash Your Hands So You Don't Get Sick". Flyers, posters, and duck and chick stickers with this slogan are available at their website: www.doh.wa.gov/ehp/ts/Zoo/salmonellachick.html

Hamsters (and other Rodents)

Rodents, such as hamsters, mice, and gerbils are also able to transmit salmonella infection to humans. In 2005, the CDC investigated 15 multidrug-resistant *S. Typhimurium* infections that had occurred during 2003 and 2004 in persons who had either primary or secondary contact with hamsters, mice, rats, or gerbils. Eight of these children were age seven or younger.

Health care providers should be aware that the CDC recommends that infants and children under 5 years old avoid contact with reptiles, amphibians, baby chicks, ducklings, and petting zoos. Children under age 5 who are medically fragile are especially susceptible to severe infection, and parents of these children should be especially warned of the danger of having these pets in the household.

www.cdc.gov/healthypets/diseases/salmonellosis.htm

Zebra of the Month: Fever and Arthralgias After Travel to Sri Lanka

In January 2007, Dr. Geoffrey Gottlieb, an infectious disease physician at the University of Washington, notified Public Health of a possible case of an unusual disease in an adult who traveled to Sri Lanka in December 2006. The patient reported arthralgias followed by 3 days of fever and chills while in Sri Lanka. Acetaminophen provided no relief. The patient sought medical care from a primary care provider upon return to King County, but the cause of illness was not identified and arthralgias persisted.

The differential diagnosis for fever and arthralgias in the returning traveler includes parvovirus infection, the prodrome of hepatitis B, juvenile rheumatoid arthritis, rubella, dengue fever, and medically important alphaviruses (read on...).

The medically important alphaviruses (genus designation) are all arthropod vector bone viruses and include mosquito-borne alphaviruses causing disease in the US (eastern and western equine encephalitis viruses), chikungunya virus (Africa, SE Asia, Philippines), O'nyong-nyong virus (Africa), Ross River virus (Australia and Oceania), Mayaro virus (South America) Sindbis virus (Africa, Scandinavia, countries of the former USSR, and Asia) and Barmah Forest virus (Australia). In 2006, a large outbreak of chikungunya fever swept over a number of islands in the Indian Ocean (the Comoros, Mauritius, the Seychelles, Madagascar, Mayotte, and Reunion)¹. Knowing the epidemiology of the specific diseases (or where to find this information just in time) provides a major clue to diagnosis.

The diagnosis in this patient was simplified when the patient presented to the University of Washington Infectious Disease clinic and reported that there was an outbreak of chikungunya fever in Sri Lanka during their visit. The diagnosis was confirmed through serologic testing at the CDC. The specimen was positive for both IgM antibody and neutralizing antibody for chikungunya virus.

"Chikungunya" is Swahili for "that which bends up," in reference to the stooped posture of patients afflicted with the severe joint pain associated with this disease. Symptoms are very similar to dengue fever, though there is no hemorrhagic or shock syndrome. Chikungunya virus is transmitted by the bite of infected *Aedes* and *Culex* mosquitoes.

The virus was first identified in Tanzania in 1953, and since then has been identified as a cause of human epidemics in eastern, southern, western and central Africa, and many areas of Asia including Thailand, Cambodia, Vietnam, India, Burma, and Sri Lanka. In 2005 and 2006, chikungunya fever was diagnosed in 12 US residents who had traveled to areas where virus transmission has been known to occur.

Chikungunya fever is characterized by fever, chills, headache, nausea, vomiting, arthralgia, low back pain, and rash. The median incubation period is 2 to 3 days (range 1-12), and the duration of acute illness is typically 1 to 7 days. Arthralgias or arthritis, primarily in the wrist, knee, ankle and small joints of the extremities, can persist for days to months. The illness is typically self-limiting and rarely fatal. Infection is thought to confer lifelong immunity.

No specific prophylaxis, treatment or vaccine is available. Prevention measures focus on precautions similar to those to used to prevent other mosquito-transmitted diseases such as malaria, dengue fever, and yellow fever are recommended for travelers to regions where chikungunya occurs. The World Health Organization reports ongoing transmission of chikungunya fever since April 2006 in Sri Lanka, India, and Indian Ocean Islands.

¹ Charrel RN. N Engl J Med 2007; 356:769-771, Feb 22, 2007.

Disease Reporting

AIDS/HIV(206) 296-4645
STDs.....(206) 731-3954
TB(206) 731-4579
All Other Notifiable Communicable
Diseases (24 hours a day)(206) 296-4774
Automated reporting line
for conditions not immediately
notifiable(206) 296-4782

Hotlines

Communicable Disease.....(206) 296-4949
HIV/STD(206) 205-STD5
Public Health Home Page: www.metrokc.gov/health/
The EPI-LOG: www.metrokc.gov/health/providers
Register for the PH Information & Alert Network
If you are an actively licensed healthcare provider in King
County, please register with the Public Health Information &
Alert Network (IAN). For assistance please send an email to:
PHSKC_CDEPI@METROKC.GOV
Include the words "SUBSCRIBE IAN" in the subject line.

Reported Cases of Selected Diseases, Seattle & King County 2007				
	Cases Reported in February		Cases Reported Through February	
	2007	2006	2007	2006
Campylobacteriosis	15	8	38	35
Cryptosporidiosis	1	0	2	2
Chlamydial infections	416	444	963	812
Enterohemorrhagic E. coli (non-O157)	0	0	2	0
E. coli O157: H7	1	0	4	1
Giardiasis	17	8	27	13
Gonorrhea	103	139	281	262
Haemophilus influenzae (cases <6 years of age)	0	0	0	0
Hepatitis A	1	0	1	4
Hepatitis B (acute)	2	1	3	4
Hepatitis B (chronic)	62	66	130	124
Hepatitis C (acute)	1	0	2	0
Hepatitis C (chronic, confirmed/probable)	112	222	130	233
Hepatitis C (chronic, possible)	29	64	32	62
Herpes, genital (primary)	53	63	140	127
HIV and AIDS (including simultaneous diagnoses with AIDS)	43	30	57	43
Measles	0	0	0	0
Meningococcal Disease	1	0	1	1
Mumps	0	1	1	1
Pertussis	9	12	11	28
Rubella	0	0	0	0
Rubella, congenital	0	0	0	0
Salmonellosis	22	10	33	26
Shigellosis	5	0	9	3
Syphilis	16	17	31	36
Syphilis, congenital	0	0	0	0
Syphilis, late	7	4	11	9
Tuberculosis	19	10	25	11

The *EPI-LOG* is available in alternate formats upon request.